

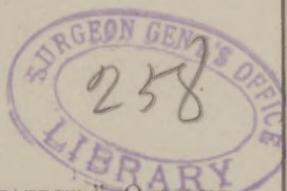
Leuf (A.H.P.)

(WITH THE COMPLIMENTS OF THE AUTHOR.)

THE TREATMENT
OF
SCARLATINA.
BY
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Associate Visiting Physician to the Department of Children and Pathologist to St. Mary's Female Hospital; Pathologist to St. Mary's General Hospital, and to the Hospital for Nervous and Mental Disease; Surgeon to the Southern Dispensary and Hospital; Secretary of the Brooklyn Pathological Society, etc., etc.

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THE TREATMENT OF SCARLATINA.*

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When we are called upon to battle with the phenomena of this affection, it is well to remember that typical cases are self limited in their duration, and tend to recovery, without, however, failing to pass through those symptomatic stages that distinguish it from other disorders. Their intensity varies between two distant extremes. Many cases occur of so mild a type that no treatment whatever is called for, and would be, in fact, an inexcusable interference. Others, again, are so malignant and unmanageable that all efforts to modify their course prove futile. The cases which do not belong to either extreme form the greater part of those with which we have to deal. They shade off in imperceptible gradations from the mild one, needing but slight corrective treatment, into those near the opposite extreme, in which the most heroic measures are often successfully responded to, when judiciously and properly applied. Of all the remedies recommended, from time to time, for the benefit of scarlatinal sufferers, some have had their day—long enough to be proven useless, while the rest have mostly been relegated to their proper sphere of utility. Some, though, are claimed to be more efficient by one set of authorities than is admitted by an opposing class. Again, able teachers have advocated some of the so-called but mythical specifics. Inasmuch, as so large a proportion of the drugs that have been recommended are of very trivial consequence or have no therapeutic value, I shall not attempt

* Read before the Brooklyn Medical Club.

an exhaustive and unprofitable chronological array of those agents that have been recommended for centuries.

I propose to divide the consideration of this subject into three parts: 1. The enumeration, in alphabetical order, of all useful remedial agents, with a brief summary of their principal virtues in the treatment of scarlatina. 2. The treatment of a typical case of average severity. 3. The management of cases of greater severity and of complications.

I. REMEDIAL AGENTS.

Acetic acid (dilute), internally administered, was once claimed by a Mr. Isaac B. Brown to be the most efficient of remedial agents used in preventing dropsy, but experience did not uphold his views. It is, however, a good refrigerant as are most of the vegetable acids. A Dr. Webster had several cases in which he claimed that sponging the patients with this acid prevented the spread of the fever to others. Its vapor has a good effect upon the throat.

Aconite is to be used in sthenic cases at the eruptive and desquamative stages, because the fever is at its maximum at this time. It is antipyretic, diaphoretic, and diuretic, and tends largely to check the nasal, faucial, and aural inflammations so often complicating this condition, and which not infrequently remain as sequelæ. It is contraindicated in all adynamic conditions. William Squire not only thinks that aconite is not needed in the mild forms, but that it is harmful in the severe types.*

Alkaline sulphates were claimed by Drs. De Ricci † and Cummins ‡ to be curative and prophylactic, but this view is no longer upheld.

Alum in solution, and used as a spray or gargle, is preferred by Cohen in the treatment of scarlatinal sore throat. He also employs acids for local purposes. §

* Quain's Dictionary of Medicine, p. 1393.

† Glasgow Medical Journal.

‡ Dublin Quarterly Journal, Vol. LVII.

§ Diseases of the Throat, p. 113.

Antipyrine is a drug lately come into vogue. It is an analogue of quinine, and a synthetical product, first produced by Dr. Knorr, of Erlanger. It appears to be a spinal and vascular stimulant, causing muscular spasm and a rise in arterial tension. Its special value consists in the certainty with which fever can usually be controlled by its administration, without any customary bad after-effects. Several cases have been reported in which this drug seemed to have a depressing effect upon the heart, and to an alarming extent, yet all the patients recovered from these symptoms. Antipyrine may be given every half hour in doses varying from fifteen to thirty grains, until the object for which it is administered has been attained. A fall of temperature usually begins to take place in half an hour after the ingestion of the first dose, if it be a full one. The dose given is for adults, and must be diminished when applied to children. I have used it continually for days, in five grain doses every hour, in the case of a child between five and six years of age. Cardiac stimulants, as digitalis, may be combined with it if indicated.

Dr. R. G. Eccles, of Brooklyn, discovered a chemical incompatible to antipyrine in sweet spirits of nitre, for if both are combined, although forming a colorless liquid at first, a blue color gradually develops until the whole liquid assumes a deep blue hue. The depth of color and the rapidity with which it forms depends upon the amount of antipyrine in solution. From the tarry odor of the drug, its coal tar origin, the like extraction of the analines, and the analine-like difference in the appearance of the liquid when viewed by transmitted light as compared with its appearance when seen by reflected light, it was suspected that the color was due to the formation of a blue aniline. Investigation proved this to be true, so that the admixture of antipyrine to sweet spirits of nitre results in the formation of a blue aniline.

Carbonate of Ammonium is administered with marked success in the treatment of scarlatina and other eruptive fevers, and is best given in a solution of the acetate of

ammonium. It is indicated in cases with delirium, and in those having a feeble circulation and marked by cyanosis. It may be taken with great benefit in two, three, or five grain doses every one, two, or three hours. Dr. Peart, who used it extensively, “* * * did not lose one patient out of nearly three hundred.” A Mr. Wilkinson had similar results follow its use, and he claimed it to be equally as good in rubeola, and stated that it prevented sequelæ in the latter affection. Mr. Charles Witt cautions against the use of acid drinks or fruits during a course of this drug, as they neutralize its effect, and he and Mr. Milton agree with Dr. Peart and Mr. Wilkinson as to the remarkably good results obtained with it. Mr. Milton also claims marvelously good effects from its use in variola as well as scarlatina.

Citrate of ammonium is well spoken of by Sir Thomas Watson.* He advises it to be given with an excess of ammonia, and when the pulse is soft and feeble.

Antiseptics—*Carbolic acid, resorcin*, and other antiseptics and disinfectants have their use as gargles and sprays to modify the fetor of the throat, when that is sufficiently affected to need disinfection and antiseptic treatment. They have also been given internally for antiseptic purposes, prophylaxis, etc., and for internal disinfection. But all that can be said of their internal utility is, that it is doubtful if not worthless. *Chlorine water* is perhaps the best of the agents in this group, in that it probably has the most success in terminating all bacterial activity. It has been satisfactorily used as a gargle. Dr. Robert Bartholow† recommends it as follows:

R.—Aquaë chlori, 5ss;
Aquaë distillatae, 5ijss;
Syrupi simplicis, 5ss.

M. S. Use as a gargle or lotion for the mouth.

Other preparations of chlorine that have disinfecting properties are also beneficial. Drs. Taynton and Williams‡

* Practice of Medicine, Vol. II. p. 822.

† Materia Medica and Therapeutics.

‡ Medical Gazette, Vol. 1V.

and Dr. Tweedie* speak well of the internal administration of this agent in ten to twelve drop doses every six or eight hours in children. A solution of chlorinated water, one to ten, is beneficial to the throat. *Sulphurous acid* inhalations have affected satisfactory results in cases of scarlatinal sore throat. *Condyl's Fluid* is employed with advantage in place of other disinfectants, to wash the patient and spray the sick-room. *Carbolized oil* may be utilized with decided benefit just previous to and during the desquamative process.

Arsenic, according to Professor Ringer,† is very useful during early convalescence when combined with nitric acid. He cautions against their use during the fever.

Beef tea (frozen) is recommended by Hare when the appetite is poor and the throat very bad, and it certainly seems very deserving of a fair trial.

Belladonna was at one time supposed to be a prophylactic against this disease, and so it is even claimed to be by many to-day, but as such it has evidently no value.

The homeopathic reasons for its use are illogical and falsely premised. It is indicated when the heart is feeble and the patient consequently weak, and when the rash is imperfectly developed and has an unnatural bluish color. Thus is it given in the same condition that calls for the carbonate of ammonium, but it must be recollectcd that as these two drugs are chemically incompatible, it is not proper to use both at the same time. Dr. J. Gardner‡ gave nothing else than this drug, except an occasional dose of castor oil, and did not permit any symptoms of delirium the patient might have to deter him in its administration. Warring§ prefers the carbonate of ammonium in most cases.

Benzoate of sodium, although not yet elevated to the distinction of the salicylate, bids fair to overtake, if not outstrip and supercede it, in its efficiency and safety in controlling febrile actions. It does not lower the temper-

* *Cyclopedia of Practical Medicine*, Vol. III., p. 656.

† *Therapeutics.*

‡ *The Institute*, January 4, 1851.

§ *Practical Therapeutics*, p. 128.

ature as quickly as the salicylates, but does so with equal certainty, and has the advantage of being more permanent in its effects, safer in its administration, and perfectly free from unpleasant after effects. Dr. Klebs, of Prague, was the first to claim the superiority of the benzoate over the salicylate. He also showed that as much as 380 grains could be taken in a day without any unfavorable manifestations. Two and a half to three drachms is the usual amount of this drug to be given in twenty-four hours. Professor Rokitansky, of Innspruch, gave this salt a remarkable impetus by claiming great curative effects for it in pulmonary consumption, even in the latest stages. His statements were endorsed by Professor Schüller, of Greifswald. Subsequent investigators, prominent among whom was Guttmann, showed, however, the absurdity of these claims, and thus this valuable acquisition to our *materia medica* and therapeutics received for a time an undeserved check in all other directions.

Blood letting has its advocates and its detractors, like most all things in this world. The tide is still against it, but not as strong as it was at one time. Tweedie* believes it to be decidedly the proper thing to do. He calls attention to an epidemic of scarlatina that occurred in Edinburgh in the year 1733, and during which very few died who had been timely bled.† As there are individual cases in which it may not be expedient to bleed, so there may also be, and actually are, from time to time, epidemics during which it is only exceptionally advisable to extract blood. Tweedie further says,‡ “* * * antiphlogistic measures almost always prove disastrous in malignant cases,”—a point well worth bearing in mind. Huxham also recommends venesection. Vogel claims that the progress of the disease is retarded if bleeding be resorted to, or if calomel be administered, and especially if both are combined.§ Leeches can be used for local depletion

* *Cyclopedia of Practical Medicine*, Vol. IV., p. 79.

† For further particulars see the *Edinburgh Medical Essays*, Vol. III., p. 27.

‡ Loc. Cit.

§ *Diseases of Children*, p. 483.

in cases of very bad throat, but care must be taken not to deplete too much. Dr. J. Lewis Smith* mentions the use of leeches, but does not seem favorably inclined to their application.

Blisters have been applied to the legs of cases of scarlatinal dropsy, and opened, after which there would be a free discharge of fluid, with relief from dropsy in a short time. Trousseau† speaks commendably of this treatment. It is well to combine with the blisters a brisk hydragogue. There is great objection to the indiscriminate use of this method as Dr. Smith (J. L.)‡ very truly says, for in weak cases the blistered surfaces may not heal, and thus give rise to much trouble.

Bromides have been used by Dr. B. F. Westbrook, of Brooklyn, for years with decided benefit in this affection. He claims for them that, 1st. If well diluted, they relieve gastric irritability. 2d. They allay vascular excitement. 3d. They lessen the tendency to cerebral complications. 4th. They have a local anesthetic effect upon the pharynx. 5th. They probably diminish, to some extent, the throat complication.

Capsicum has been used both internally and externally in this affection, and was originally advocated by Dr. Stephens in his "Medical Commentaries."

Carbonic acid water (cold) is recommended by Loomis§ as a good throat application, and he seems to have had pleasant results follow its use.

Carotid compression has long ago been shown to be useful in controlling at times the convulsions of scarlatina. In case of unilateral convulsions one should not forget to compress the artery of that side of the neck opposite to the side of the body affected. Both vessels should be compressed, *but alternately*, if the convulsive attacks are bilateral. Sometimes this treatment is remarkably prompt in giving relief.

* Diseases of Children.

‡ Practice of Medicine.

† In his Therapeutics.

‡ Loc. Cit.

Chloral may be used in this affection with great advantage to produce natural refreshing sleep. It is safer than opium.

Chlorate of potassium is highly spoken of by Drs. T. Watson and Copeland. The former uses it as a drink, with marked benefit, it especially causing a cleansing of the tongue, while the latter highly extols its merits in the terminal stages of the disease. Warring* believes it to " * * * often prove very serviceable in *anasarca* supervening on *fever*." Large doses of this drug produce renal irritation, and tend to congestion and even inflammation of these organs, and also have a depressing effect upon the heart.

Chlorate of sodium bids fair to supplant the preceding salt of potassium. It possesses all the good qualities of the other, is much more soluble, and does not irritate the kidneys nor depress the heart, at least not so much so as the chlorate of potassium. In consequence of its increased solubility, it will exert a beneficial effect upon a sore throat left undisturbed by the saturated, but weaker, solution of the other salt. The comparative merits of the two drugs have been largely dwelt upon by Professor Trail Green, of Easton, Pa.†

Chlorinated soda is valued very highly by Watson.‡ He recommends syringing the throat if the patient cannot gargle. This drug checks much of the secretion and makes it inoffensive. It also checks diarrhea.

Cold Douche.—This is one of our best and quickest means for lowering the temperature. Currie was the first to reduce this treatment to a methodical form. It consists in placing the patient in an empty bath-tub, and throwing pails of cold water over him for from one-quarter to one minute, but not longer. The temperature of the water should be from 20° to 25° Cent. Then do not dry the patient, but roll him in blankets and put him back to bed. The reaction will come on in fifteen or twenty

* Loc. Cit.

† See Journal of the American Medical Association.

‡ Practice of Medicine, Vol. II., p. 822.

minutes. This douching must be repeated once or twice in twenty-four hours. It should be used without hesitation and immediately upon the supervention of delirium, convulsions, diarrhea, etc., and when danger is imminent. Rousseau* says: "I declare to you, that I have never resorted to the employment of cold effusions without obtaining beneficial results." Dr. Hiram Corson, of Pennsylvania, announced in 1864, his remarkable success in the use of cold affusions, principally applied to the head, whenever cerebral symptoms became manifest. Currie reports a case he had in which the temperature reached 112° F., and Noodman one that went up as high as 115° F. Meigs and Pepper† would use cold just in proportion to the vigor of the patient showing nervous symptoms, and would, on the other hand, use less in proportion as the patient was asthenic and unable to rally and react. They recommend its use in all cases having a temperature of 106° or 107° F., or over. Dr. Fox suggests that the bath be dispensed with and Mackintosh cloth placed upon the bed and under the patient, and water then poured upon the sufferer. It is also well to bear in mind that the temperature may continue falling more than 3° F. after cessation of the douching process, and in some cases there seemed to be dangerous collapse following this unlooked for decline, but as in the use of veratrum viride and many cases of uterine colic, the fears thus engendered are unwarranted. Give reactionary drugs, as stimulating aromatics, if it seems necessary, while the patient is being douched, or just thereafter. Thomas‡ says: "Literature is rich in the records of cases of scarlet fever with a high degree of fever accompanied by serious disturbances of the nervous system, which have been successfully treated by means of cold baths, properly administered packs, the cold douche, or the more or less general use of cold dressings; in like cases, therefore, no rational physician should hesitate to employ hydro-therapeutic measures."

* Therapeutics.

† Diseases of Children.

‡ Ziemsen's Encyclopedia, Vol. II., p. 306.

Cold sponging of the body is advised by Hartshorne* to produce sleep in insomnia during a scarlatinal attack.

Cold Wet Pack.—This is of decided utility in cases having a temperature running over 104° or 105° F. It is a good substitute for the cold douche. It is especially indicated when scantiness of urine and a dark and indistinct eruption is associated with the fever. The local cold wet pack to the throat is also efficient, and particularly so when combined with the use of hot gargles. The wet pack should be applied to the body immediately upon the premature recession of the rash. It is one of the very best means adopted for the restoration of the eruption, and should be applied about thirty minutes, although it may be continued an hour longer, if advisable. The patient is thereby caused to rapidly change from an alarming condition he may have been in to a tranquil sleep, with lowered temperature and pulse rate.

Digitalis is very valuable in that it is antipyretic, diuretic, and greatly strengthens the heart. Dr. Daniel Lewis, of New York City, adopting the suggestion of Roberts Bartholow in the use of this remedy for scarlatina, showed a mortality of only eleven per cent. in his hospital cases thus treated, as compared with the twenty-three per cent. mortality evidenced by the returns of the registrar of the city Board of Health.† The dose varies with the patient's age, and may, according to Bartholow, be from $\frac{5}{j}$ to $\frac{5}{ss}$ of the infusion every two, three, or four hours. In uremia, its usefulness is increased. The same writer claims to have had good results follow the application of poultices of digitalis leaves to the belly and back in cases of uremic convulsions.

Diuretics most often do harm by exciting the kidneys. In hematuria it is well to use local bleeding and give systemic hemostatics. The drugs of this class have their

* Reynold's System of Medicine, Vol. I., p. 96.

† Reports of Boards of Health, at least with reference to percentage statistics in reportable disease, must always be taken with great allowance, because, while all of the fatal cases are reported, all those that recover are not reported.

action increased by being combined with mercurials. Dr. Sidney Fennell* has employed, with very good results, a combination of digitalis, nitric ether, and nitrate of potassium.

Emetics also have their advocates, and Warring† is especially in favor of them ; the general claim being that if given at the beginning of the disease, a favorable influence is exerted upon the whole of its further course.

Febrifuges of a mild nature, such as lemonade, orangeade, diluted vinegar, and other sour fruit-drinks, prove very serviceable throughout the whole course of the fever. They also serve to modify the thirst and prove grateful in reaching the impaired sense of taste.‡ “*Sulphuric Acid (dilute)*,” says Warring,§ “with the addition of a little syrup and water, forms an excellent refrigerant medicine, particularly for children.”

Ferri Subsulphatis.—Dr. J. Lewis Smith|| recommends the following :

R.—Liquor ferri subsulphatis, 3j;
Glycerinæ, 3ij. M.

He says of it, “there is no application more effectual than this in removing any pseudo membrane, and by its powerful astringent effect diminishing the turgescence of the inflamed surface.”

Ferri Perchloride.—Dr. McGee¶ says: “Upon the whole, no remedy is equal in value to the perchloride of iron.” It is to be given later in the disease, especially when there coexists albuminuria and hematuria, and should be combined with a nutritious diet. It has been given in doses of from m_v to m_{xv} , every three or four hours.**

* *Lancet*, January 23, 1869.

† Loc. Cit.

‡ Dr. Lanchlaw Aitken, of Rome, in the British Medical Journal, mentions the marked antipyretic value of lemon juice, and says that it is as good as quinine to reduce fever. It should be administered in the form of a concentrated decoction. One lemon usually suffices for twenty-four hours, and the fresher it is the more decided and reliable will be the effect. Hence, this treatment is most effectual in tropical lands, where the lemon grows. The value of the lemon as a febrifuge is well appreciated in Italy, and particularly in some malarial districts. See also a paper by Professor Conrad Thomasi Crudeli, in the New York Medical Record, of August 23, 1884.

§ Loc. Cit.

|| Loc. Cit.

¶ Volume I, p. 375.

** See a paper by Mr. H. Mead, Medical Times and Gazette, June 26, 1858.

Grey powder (mercury with chalk) is highly recommended by Ringer,* in one-third grain doses every hour, in cases where the tonsils are so enlarged as to almost touch each other. The swelling is greatly reduced in a few hours. This is also true of all kinds of tonsillar inflammation. If suppuration has already begun the formation of an abscess, this treatment hastens maturation and evacuation.

Hot air baths are efficient for the induction of diaphoresis. Squire† is one of the latest to mention them with favor.

Hot baths have been recommended to be taken once or twice a day in the early stage of dropsy.

Hot fomentations are also of signal service, particularly when applied to the lumbar regions in the beginning of renal complications. They will cause diaphoresis and a counterflux of blood, thus check or mitigate a threatening renal complication, and relieve already existing or approaching convulsions or cerebral phenomena.

Hydrochloric acid (dilute) is very serviceable in allaying thirst and obviating adynamic tendencies by maintaining digestion. It may also be diluted with ten parts of water and used as a gargle, or it can be mixed with five parts of honey and applied to the throat with a brush. A combination of this acid with chlorate of potassium, although not an uncommon occurrence, must be guarded against, as the result of their union is chlorine water. Rousseau‡ gives this acid his unequivocal endorsement, and recommends its application in full strength to the sore parts of the throat twice in twenty-four hours during five or six days. Dr. Hood uses this remedy systematically from the very beginning, but precedes its administration with an emetic and a purgative. Hydrochloric acid seems to have been first extensively used in this country.

* Loc. Cit.

† Quain's Dictionary of Medicine, p. 1393.

‡ Quain's Dictionary of Medicine, p. 1393.

Hydragogues are very efficient in diminishing the amount of the serous and intercellular effusions when these conditions prevail. These drugs should, as a rule, be brisk and decided. They are also of great value in uremic conditions.

Hygiene is extremely important in the treatment of scarlatina, and is of fully as much significance to the healthy attendants and visitors as to the patient, because of the contagiousness of the disease. Isolation of the patient should be as complete as possible, and all but the most necessary visiting should be interdicted. Fresh air of the proper temperature cannot be too plentiful. All unnecessary furniture and fixtures should be removed, and all appliances that remain should be as plain as possible and with smooth surfaces.

Ice in the mouth is decidedly useful and gratifying when the throat is very hot and painful. This is truer during the earlier history of the disease.

Inunctions of fat, as has been amply demonstrated, are useful in all fevers, and at any time, for the purpose of lowering the temperature and gratifying the patient by relieving the unnatural dry condition of the skin and its morbid sensibility. It is, however, most useful in the desquamative stage of this affection. The most agreeable form in which to use it is cocoa butter. To Schnemann belongs the credit of reviving this old but efficient therapeutic measure, and affixing to it its proper place in our *materia medica*. Vogel* says "of all the remedies, the preference should therefore be given to a diluted mineral acid; of all methods, to a modern infliction of fat." Schnemann habitually uses bacon-fat for his inunctions, and retains the rind to give his fingers a good grasp while scrubbing, so to speak, the patient's body. Meigs and Pepper† have tried it, but prefer to use an ointment composed of Glycerine $\frac{5}{j}$.—cold cream $\frac{5}{j}$. Dr. J. Lewis Smith‡ prefers $\frac{5}{j}$ of sweet oil or glycerine to gtt. vi. or viij of carbolic acid.

* P. 483.

† P. 740.

‡ Loc. Cit.

Juniper is a good diuretic in scarlatinal dropsy. It may be given in the form of gin.

Lime water or salt solution, or both, have been employed with benefit as nasal injections during troublesome coryza. This treatment is advocated by Dr. Hillier;* he also advises the use of soap and water when the secretion is tenacious.

Magnesium sulphate should be freely but judiciously administered in this disease, as it seems to prevent the sore throat of scarlatina and of the eruptive fevers generally.

Mustard Bath.—This is very effectual in bringing back the rash during or just after its premature recession. The patient's body should be kept submerged until a general smarting ensues.

Nitric acid (strong) may be applied to sloughs of the throat with excellent results, but must be used cautiously so as not to intensify the inflammation in adjacent parts.

Nitro-hydrochloric acid is recommended as a gargle by Warring.† He says that it must be strong enough to slightly smart, and that it may be sweetened with honey, and that it may be given internally with advantage.

Opium has its use in this disease, but should not be given exclusively to promote sleep. Pain, hypersecretion, and high arterial tension are good indications for its use. It must be carefully employed.

Ozone inhalations have been advised by Francis. Its utility is yet doubtful.

Pilocarpine may be given hypodermically to induce perspiration. The muriate can be administered subcutaneously to children in $\frac{1}{6}$ grain doses twice in twenty-four hours.

Quinine is of undoubted utility in this disease, as it is in all other febrile disturbances. If given with a view to its antipyretic effect, the doses must be large and at long intervals. Dr. Hood states that he has not lost a single case of scarlatina, that has been under his treatment from the beginning, since he began the use of quinine both as antipyretic and tonic. Of course, the tonic doses must be

* P. 317. † Loc. Cit.

small and more frequently repeated. Dr. Hamburgher* considers quinine the most successful of all remedies in the treatment of scarlatinal albuminuria, as he has found it to be so. According to Dr. Hillier, if, after the subsidence of acute symptoms, nasal and aural inflammation remain, they are best treated with quinine and sulphuric acid, which he says had better be conjoined with warm-water injections of the ear, and counter-irritation over the mastoid process in ostitis. The utility of quinine in preventing kidney complications is supposed to be due to its checking the proliferation of the cells lining Bowman's capsule.

Salicylic acid and its derivatives, preferably the salicylate of sodium, are decidedly antipyretic and also diaphoretic. They reduce the temperature directly, regardless of the amount of diaphoresis,† although the latter action is to some extent accessory to the former. The extreme temperature being one of the greatest dangers of scarlatina, it becomes very important to keep it within safe limits, and the sodium salt is the least dangerous of the salicylates for this purpose, while it is equally as effective as the others, and the least irritating of them all. The antipyretic dose is gr. x every hour, till the temperature comes down, after which it is to be held in check by the exhibition of half this quantity of the drug, and this must again be increased in the event of any febrile exacerbation. The daily quantity for children may range ordinarily between thirty and sixty grains. It may be given in solution with syrup, or in wafers. It should be used with great care, or not at all, when the subject has a weak heart and albuminuria.

Salt pork sliced and sewed to a single thickness of linen, and put to the throat from ear to ear, with the band running over the vertex, is a method of treating the throat recommended by Dr. J. Lewis Smith.‡ He also advises

* Archiv. Général de Méd., April, 1861.

† This fact no longer admitted of any doubt after Moelj reported, that in half of his cases responding to the administration of this acid with a lowered temperature, there was no diaphoresis.

‡ Loc. Cit.

sprinkling the pork with powdered camphor and salt to increase its irritating effect. It should be applied continually, except when the irritation proves too severe and then it is to be discontinued for a proper length of time.

Sanguinaria.—The acetous infusion, prepared by adding 5ss of the fresh root to Oj of vinegar, is the most effective of all gargles according to Dr. Jennings.*

Sodium sulpho-carbolate has been strongly advocated by Sansom, in quantities ranging from fifteen to sixty grains daily.

Spongopilin (hot) has been recommended for application to the throat by Samuel Jones Gee, M. D., and used by him with good results.†

Stimulants.—Dr. A. T. Thompson seems to have been the first to propose the use of claret in this disease. Warring‡ says “ * * * it is an excellent adjunct to carbonate of ammonium, quinine, and the mineral acids.”

Strychnia may be used hypodermically with advantage in paresis or paralysis following scarlatina. Mr Barwell injects into the muscle substance $\frac{1}{20}$ to $\frac{1}{12}$ gr. in the form of a two per cent. solution. If a weaker solution is used, it is better to inject a little less of the drug. These doses, with this solution, are followed by no bad results. They should be repeated every forty-eight hours, although they may be given oftener. In consequence of possible idiosyncracies, it is best to begin with a small dose, as the $\frac{1}{40}$ of a grain.

Tannin has been recommended for gargles by Dr. Hillier in relaxed conditions of the throat and tonsils subsequent to an attack of scarlatina.

Tepid sponging is almost as efficient as the cold douche, and will be in those adynamic cases which are so depressed that a cold douche would seriously endanger the life of the patient. It must not, however, be continued quite as long as the cold douche.

Veratrum viride is highly recommended by some to control convulsions and even to lower the temperature. Many advise its use only in sthenic conditions, but bolder

* The Stethoscope, ii., p. 182.

† Reynolds Vol. i., p. 96.

‡ Loc. Cit.

therapeutists are no less confident of its successful and safe use in asthenic conditions. It certainly is not so much more dangerous than aeonite, as was once supposed. To get its effect fully, it is sometimes necessary to obtain some apparently alarming symptoms, but in a short time they disappear without any bad effect.

Yeast.—Bennett claims to have had unexceptionally good results in scarlatina by the use of $\frac{5}{2}$ ss to $\frac{5}{2}$ j of fresh yeast given several times daily, and especially in malignant cases, as he has never lost one treated in this way.

II. THE TREATMENT OF A TYPICAL CASE OF AVERAGE SEVERITY.

What most concerns us in handling a case of this kind is, after having made our diagnosis, to supply the patient with the best hygienic surroundings and proper food properly regulated, and to maintain the affection within its limits by the most natural means at hand. Medicines proper should not be unnecessarily administered.

Hygiene.—The bed should be moderately firm and ample in size, in case the patient becomes restless; it should be scrupulously clean and changed as frequently as necessary to preserve its freshness; the covering should not be heavy, in fact ought to be as light as possible without exposing the patient to accidental draughts of air. The room should be large, high, light, and airy, with its doors, windows, or ventilators, so arranged with reference to the patient that draughts could not reach the bed. The average temperature near the patient ought to be about 70° F. This must, however, be lower if the fever rises, that is, the temperature of the sick-room should bear, approximately, an inverse ratio to that of the sufferer. Nothing should be permitted in the sick-chamber except what is necessary to the welfare of the patient. Everything else had best be plain and with smooth surface, so as to admit of ready and perfect cleansing. It is preferable, from a prophylactic as well as hygienic standpoint, to have no carpet or curtains in the room. Plain shades and inside shutters are best to keep out the noon-day

glare and regulate the daylight. The nurse should be strong, intelligent, pleasing in her manners, and acceptable to the patient. Her clothes should be, as nearly as possible, of the same plainness and smoothness as the furniture of the room and for like reasons. Linen or muslin goods are best adapted to the sick-chamber, especially when freshly starched and ironed. The colors of the clothes worn by the nurse should be selected so as to be as pleasing as possible to the patient. The patient should be quarantined as much as possible, and only a very limited number of persons allowed to visit the sick-room. Perfect quarantine is the best possible prophylactic against the spread of this and other contagious diseases. The patient should not be permitted to undergo any unnecessary disturbance. The nurse should reign supreme during the absence of the physician.

Food.—This should be highly nourishing and, at the same time, easily digested. Milk is the best, if not well borne, it can be diluted with lime water, vichy, or seltzer, etc. Skimmed milk and butter-milk are grateful to many palates that reject sweet milk in any form. Beef tea properly made, or a reliable beef-juice diluted, are nourishing and stimulating. In case digestion is inefficient, the milk and beef preparations can be peptonized and pancreatized previous to ingestion. As a rule, the sense of taste is so impaired that the difference between undigested and partly or wholly digested foods are not perceived. The food should be administered either hot or cold, as preferred by the patient. Its form should be changed with sufficient frequency to prevent its eventual intolerance by the nauseated sufferer. Eggs constitute a very nourishing food, generally borne well. They may be given with milk, or, if the heart is weak, alcohol may be added, thus forming egg-nog, one of the most nourishing and concentrated of our natural foods. This may also be partly, or wholly digested, if need be, previous to ingestion. Pure ice cream is a good article of diet. As a rule, it is well borne and remarkably well relished. I use it very much with children in febrile conditions generally, and

select lemon as the flavor because of its slight refrigerant properties. This article of diet has, moreover, a good, although transient, effect upon the sore throat. One great point in its favor is that it causes an amelioration of pain while the patient eats, contrary to what generally prevails while taking food through an inflamed hypersensitive pharynx. Drinks are constantly called for in small amounts and should be freely given. They should be cold and varied. The drinker's preference should have full sway in deciding upon the character of these grateful draughts, as long as they are not positively injurious. Weak lemonade or orangeade are usually relished, also diluted claret, or claret lemonade. Pineapple water will prove grateful as a change. No form of drink should be continued long enough to turn the patient against it. Dilute mineral acids, notably nitro-hydrochloric, are not only acceptable to the patient but promote a flagging desire for food and aid digestion. The preparation of all food and medicines in the sick-room should be avoided. Patients, especially children, will take what is offered them and make no objection, although it be medicine, as long as they do not see it prepared. Many object to medicine because it is medicine, and not because it tastes bad. The mode of administering should also be as varied as possible, and hence the necessity for an ingenious, well informed, and judicious nurse. Food and medicine may be given separately or together, and may very frequently be changed as regards consistence, color, flavor, smell, quantity, and frequency of administration.

Anorexia, nausea, and vomiting, if not too severe or persistent, may, like other mild symptoms, be left to themselves, as they are symptomatic of the process of the general adjustment of the system to the inroad of the scarlatinal virus.

A rule always to be remembered in the treatment of disease is the fact that all having the same name do not require similar medication. Disease, like health, has its normal series of phenomena; in other words, there is a

physiology of disease. The clinical history of a typical case of scarlatina (or of any other disorder) is an exact expression of *its* peculiar physiology, just as all the ordinary facts of normal physiology constitute the definite expression of the proper working of all the bodily organs in the condition of perfect health. It is as improper, therefore, to seriously modify the normal clinical history of any disorder having its natural limits as it is to interfere with the normal phenomena of healthy life. We should no more attempt the depression of the temperature of scarlatina, for instance, to 100° F. than that of health to 96° F. It is simply our duty to combat the deviations from the natural phenomena which are peculiar to the particular disorder under consideration. It is not our duty to combat *all* the deviations from the normal standard. Added to this we must support the failing strength if that is necessary. These, then, are the two great indications, that is, 1st, to simply maintain the disorder within its normal limits instead of *attempting* a premature return to normal health; and 2d, to sustain the failing strength.

The clinical history of a disorder is, therefore, the safest guide in our ministrations to the sick. Study nature's method of cure. In other words, the aim should be to aid the *vis medicatrix naturae*. Great exacerbations and complications do not generally belong to the natural history of disease. These it is often advisable to avoid by early and judicious prophylactic medication.

Medicines.—Bearing well in mind the fact that the mildest and the most promising case may, at any time, suddenly assume a grave aspect, it is always safe and frequently very desirable to begin the treatment even of mild cases with the exhibition of quinine in two grain doses every three or four hours, with the object of not only controlling the temperature, but also of preventing renal complications. Inunctions of quinine ointment may be used in children who cannot swallow pills, or pills may be given per rectum.

For the purpose of allaying thirst and gratifying the palate, it is best to use highly diluted mineral and vege-

table acids. Sweetening of drinks should be prohibited or very sparingly permitted. The acids, especially the mineral acids, will promote the antipyretic effect of the quinine.

The diarrhea of invasion, as a rule, requires no attention, and if so, can be checked with bismuth and compound ipecacuanha powder. Generally the bowels are a little constipated after the diarrhea of invasion, but will behave satisfactorily if the patient drinks plenty of fluids. Should the bowels, however, persist in remaining sluggish, it is well to start them with a powder composed of a few grains of calomel and about three times as much of bicarbonate of soda. In small children, the soda can be replaced by a small quantity of white sugar, when it is readily taken.

The diarrhea of scarlatina is accompanied by congestive enlargement of the lymphoid follicles of the intestine forming the solitary and aggregated glands, especially the latter, just as in the first stage of the lesion of typhoid fever. This likeness was first dwelt upon at length by Dr. John Harley, of London.* Epistaxis is another not infrequent accompaniment of scarlatina that increases its resemblance to typhoid fever at this stage. It is a curious as well as interesting fact, that while, on the one hand, mercury has its warm exponents in the treatment of typhoid fever,† it has many able advocates of its efficiency in scarlet fever.‡ In this latter affection, however, it is mainly given to allay the tonsillar enlargement and inflammation, together with the like involvement of the neighboring lymphatic glands. The continuous administration of mercury in small doses insures a more perfect glandular activity and nearer approach toward a normal action of the bowels.§ The claim, therefore, of the utility of this remedy in the treatment of scarlatina seems deserving of more universal attention than it has thus far

* See "The Pathology of Scarlatina, and the Relations between Enteric and Scarlet Fevers," in the Medico-Chirurgical Transactions, Vol. Iv., p. 103.

† Especially in Germany.

‡ Ringer advises the use of gray powder in one-third grain doses every hour.

§ Ringer, particularly, loc. cit

received. The throat is very beneficially affected by calomel, which should be given in fractional doses at intervals of a few hours for its effect upon the tonsils and the general glandular apparatus. It thus affects the tonsils directly and indirectly by increasing the activity of this apparatus in modifying the scarlatinal virus.*

The salines are highly recommended by Squire† for their moderate antipyretic effect in the beginning of mild cases. He, however, thinks the acids had better replace them if there is a tendency to thermal elevation on the fifth day. The continuous use of the salines also obviates constipation.

The eruption first appears on the neck and upper chest, and begins as a punctate roseola, soon becoming macular with irregular outline. It spreads rapidly. The hue is bright scarlet if normal, except on the back where it is often found to be purple. Should the eruption be modest, it is best studied on the belly, thighs, and around the joints. It should begin to recede in one or two days. All the preceding symptoms, as a rule, remain and are intensified. The pulse may range all the way from 120 to 170 per minute and should not alarm the attendant as long as it is moderately strong and regular. The arterial tension should be fair, and, if not, it is best increased by the use of digitalis in oft-repeated doses. The attempt should not be made to lower the pulse rate to the healthy standard. The carbonate, muriate, and aromatic spirits of ammonia and alcohol are also good cardiac and vaso-motor stimulants, especially the carbonate, which is one of the best remedies used in this affection.‡

Stimulating sponge baths of weak and tepid mustard

* It may be well to remember that in consequence of the seeming likeness between typhoid fever and scarlatina, and because many claim bad effects from the administration of quinine in the former disorder, the inference may be drawn that the use of this drug in scarlatina should be inhibited in the face of such apparent similarity between the two affections. It is true, though, that quinine proves beneficial in scarlet fever as regards the temperature, glandular inflammation, otitis, and nephritis. Moreover, I have never seen bad effects follow the use of quinine in typhoid fever justly traceable to the drug itself.

† Quain's Dictionary of Medicine, p. 1393.

‡ Peart, Wilkinson, Witt, Milton, Warring, and many others.

water will help to force out a modest rash almost as well as any remedy at our disposal. Ordinary tepid sponging may also be employed with advantage. Oft-repeated enemata of cold water are of decided benefit in reducing temperature and relieving thirst, and may safely be used in sthenic cases.

The throat may be treated locally by permitting the patient to hold ice in the mouth, while at the same time heat or counter-irritants are applied to the neck. Gargles of flaxseed tea, borax, and honey, or chlorate of sodium, are also of value. It is better to use hot applications locally on the skin than cold, because of the danger of a recession of the rash if the latter be employed. This class of patients are, besides, very susceptible to cold or draughts of air, and it is very necessary to prevent them from becoming chilled. It is also a safe rule to favor hot applications in the feeble rather than cold. Loomis* prefers hot to cold applications in this disease. All ulcers had best be cauterized by any of the ordinary caustics among the most useful of which are hydrochloric acid or the nitrate of silver.

The skin had better be sponged with a tepid disinfectant solution once or twice a day to prevent the spread of the contagium. Only a part of the body should be sponged at a time. Should the temperature run a little higher than is favorable, a carbolized ointment could be used instead, and, in the case of small children, the quinine could also be combined in the mixture.

The stage of decline usually lasts a couple of days, leaving no sign of the eruption at the end of the sixth, seventh, or eighth day, usually, although Hillier says it sometimes is as late as the twenty-fifth day. All the preceding symptoms should decline with the disappearance of the eruption. Desquamation continues about ten or twelve days longer, often leaving the skin tender. There may and often is, also, a slight and transient co-existing albuminuria. During this stage of exfoliation it is best to use friction and disinfectants, as carbolic acid or sul-

* Practice of Medicine.

phur soap, to aid in the removal and make harmless the infectious epithelial scales. A weak solution of the bi-chloride of mercury is a good substitute, but must be very carefully used. Best of all, probably, is a wash of weak chlorine water, say one in twelve.

General irritability, restlessness, headache, and throat tenderness can be allayed by the administration of the bromides, and, if necessary, chloral.

The urine must be expected to be scanty and high colored, as is its normal characteristic in febrile disturbances.

The new and valuable drug, antipyrine, should be unhesitatingly administered, if indicated. Cardiac stimulants may be given with it if the pulse is feeble and the anterital tension low.

The patient should be kept in doors at least six weeks to prevent the infection of others.

III. THE MANAGEMENT OF A CASE OF GREATER SEVERITY AND OF COMPLICATIONS.

Should the disease assume so serious an aspect that the necessity for medicinal interference seems imperative, the preceding remarks concerning hygiene and nursing are more pertinent than ever, and need not now be repeated.

The practitioner should remember that there is no drug that has the power of shortening the duration of scarlatina. He should be ever on the alert, and suspicious of every change. Fearless, too, must he be in the use of medicines. The dose should always be measured by its effect and not by what it is stated to be in the books. The physiology of the disorder must be prominent in the attendant's mind. All deviations from the standard of the disorder toward the normal condition of health are, as a rule, indicative of a change for the better and should not be counteracted; whereas, changes from the typical clinical history away from the normal prelude are an additional tax upon the patient, and must be promptly and decisively counteracted. The fact should not be forgotten that during the earlier and acute stages, where there is great danger of acute nervous trouble, extreme

care should be exercised to sustain the nervous system. Convulsions may be treated with belladonna, combined with some of the aromatics, or, instead of these, the bromides might be employed, particularly in the cases having a vigorously acting circulatory apparatus. It is my habit to combine the bromides with chloral, as follows:

Ry—Potassii Bromidi, 5ss.
Sodii Bromidi, 3ij.
Chloralis, 3i.
Syrupi Pruni Virginianæ.
Tincturæ Cardamoni Compositæ.
Aquæ, aa 5ij.

Misce et fiat solutionem.

Sig.—One teaspoonful every hour.

To be given at shorter intervals, or in larger amounts, or both, according to the age and needs of the case.*

Sleeplessness is often best treated, even in very severe cases, by sponging the body.† Great pain should, of course, be alleviated with opium. The camphorated tincture is the best preparation to use in children, because of the comparative smallness of the dose required, and because the drug is combined with an aromatic, thus insuring rapid absorption.

A high temperature, say 105° F., or over, should be promptly met with increased doses of quinine. Should this prove ineffectual in reducing the fever to a point a little below 105° F., antipyrine will probably be the most useful drug that can be given. The first dose may be two or three times as large as those succeeding, for the purpose of getting the patient at once under its influence. If there is asthenia, stimulants should also be administered, digitalis being the best, because of its antagonism to antipyrine on the heart.‡ It is best administered with

* See also carotid compression in the section on Remedial Agents.

† Hartshorne, loc. cit.

‡ It is claimed by many that antipyrine is a cardiac sedative, and that marked depression and even death have resulted from its use. There may, however, be some doubt about the correctness of these interpretations of its action, as there are others who have employed it in large amounts without bad after-effects traceable to the drug. I use it very much, and in one case gave fifty-five grains, in less than eight hours, to a girl not yet five

the syrup of tolu, as in that way its bitter taste is fully masked.*

The digitalis should be given in large doses, if the temperature is high, in a weak child with a rapid and especially irregular pulse. By itself it is often an efficient antipyretic.

Claret wine appears to be one of the best alcoholics that can be employed in this affection at any stage when it is indicated by the condition of the patient.† Warring strongly indorses this wine in support of Thomson, and praises it, in combination with quinine, the carbonate of ammonium, or the mineral acids.‡

Benzoate of sodium should be remembered as a reliable antipyretic and one not likely to be followed by any bad after-effects.

Best, surest, and quickest of all is the cold douche, or any of its equivalents, as the cold pack, cold sponging, spraying the douche to the head and neck, tepid sponging, etc. Whenever the temperature is in marked excess of that of the normal clinical history of the disorder and accompanied by alarming symptoms, dependent, or seemingly dependent, upon the degree of fever, the indication is to reduce it with the least possible delay; to this end a large dose of any of the reliable antipyretics indicated, or at hand, is to be given, and the local application of cold begun and continued until the temperature is within safe limits, where it should be maintained by this means until held there by the previously administered drug.§

years of age. She had a persistent high temperature, and a diagnosis could not be made. Her temperature was 105.5° F. Sponging the abdomen and chest with cold water and vinegar brought the fever down to 103.5° F. in about twenty minutes. She had already taken ten grains of the antipyrine, and, during the night, received the other forty-five grains. When I saw her in the morning, she had a normal temperature. Her fever redeveloped on the same day, and forty-eight hours later she gave undoubted signs of pneumonitis, from which she recovered.

* Immisions of fat, frequently administered, should be routine work during the high fever, as is the administration of quinine or some other antipyretic.

† A. T. Thomson was the first to point out its value in scarlatina as a stimulant.

‡ Loc. cit.

§ The value of aconite in sthenic fevers should not be forgotten.—Vide Supra.

When the rash is not well marked or dark, and the circulation feeble, no better remedy can be used than the carbonate of ammonium in solution in the acetate of ammonium. It should be given in two, three, or five grain doses every one, two, or three hours. The cold wet pack rapidly and judiciously applied is a most valuable adjuvant to the ammonia treatment, and may be relied upon for bringing out the eruption if applied, even without the concomitant use of drugs.

The throat often becomes badly involved. The early use of fractional doses of calomel or gray powder, as previously indicated, is frequently of positive value in converting a threatened pharyngeal abscess into a simple sore throat. The use of sprays thrown into the mouth and nostrils is highly spoken of by Cohen.* The only drug he mentions is alum. Scarlatinal abscess, according to McGee,† should never be permitted to open spontaneously. The practitioner must be ever on the watch to aid in their evacuation at the earliest opportunity. When the pharyngeal inflammation complicates the nose, the best plan of irrigation is that recommended by Thudicum. The patient is required to keep up continuous respiration, so as to shut off the upper pharynx from the lower part of the same space by the apposition of the velum palati to the posterior pharyngeal wall. The irrigating fluid is then gently injected into one nostril and passes back and over the velum to return through the nose on the opposite side of the septum. This, of course, cannot be done by all patients, but a little perseverance in practice will make it practical in most cases.‡ Thudicum used a solution composed of sodium chloride (5j—Oj). Astringent and disinfectant solutions may also be injected into the nostrils if necessary, although this method, it must be remembered, is not wholly devoid of danger, as some of the fluid may enter the Eustachian tube. Dr. R. G. Eccles, of Brooklyn, tells me that he has been very successful in treating a number of severe cases of anginal scarlatina with nasal

* Diseases of the throat, p. 110.

† Loc. Cit. p. 97.

‡ Lancet, November 26, 1864.

injections of carbolic acid and the glycerole of tannin. The relief in his cases was prompt and decided. Lime water* and solutions of quinine have also been recommended as nasal injections.†

Ulcerations of a scarlatinal sore throat need stimulation to healthy activity, besides protection from infectious material till healthy granulations have formed. Troussseau‡ recommended for this purpose the local application of strong hydrochloric acid. Ice may also be held in the mouth to ease the sufferer. The magnesium sulphate is said to exert a preventive action on the throat in this disorder. Chlorine water or a dilute solution of the permanganate of potassium (Condyl's fluid) are the best disinfectants.§ If parotitis or mumps exists, as a complication, warm applications constitute the best treatment. Aromatics should be added in case of severe pain. Cold must not be used, as it tends to involve the testicles, and when these latter organs are affected, they are amenable to the same treatment as just stated. It is very necessary to put these cases to bed whether there is an implication of the testicles or not.

All ear complications must be promptly treated. If the pharyngeal portion is affected, care must be taken to preserve the patency of the Eustachian canal (Wendt). This complication is no contra-indication to the cold bath, but during its administration, oiled cotton should be placed in the external meatus. Cod liver oil is indicated in otorrhea, as is also quinine|| in occasional large doses. Warm disinfectant and slightly astringent gravity injections should be used morning and evening.

Conjunctivitis should be treated with cold water dressings, and in case of suppurative keratitis, care must be taken to use no force in vain endeavors to wash the eyes

* Recommended especially by Hillier (p. 317), who also advises soap water injections to liquify the nasal mucus if it be tenacious.

† Aconite is also claimed to modify favorably the course of the nasal and faecal inflammation—*Vide aconite.* ‡ Loc. Cit.

§ Too much stress cannot be laid on the necessity of tying the cloths around the throat across the vertex, over the ears, as was pointed out strongly by J. Lewis Smith.

|| Hillier Loc. Cit.

of an unwilling and struggling patient, as by the force likely to be exerted under such circumstances, a threatening corneal rupture may be consummated.

Bronchitis and even pneumonitis, especially of the lobular variety, may arise as complications due to the extension of the eruption, or pharyngitis, or both. These complications require no special treatment other than that already mentioned, and what is usually administered in these affections. Symptoms should be met as they appear.

The most critical period is at the time of desquamation. Dropsy is the most frequent complication of scarlatina, at this time especially, and is oftenest due to cold. Milder cases are best treated with active hydragogues and diaphoretics, alternately administered in conjunction with the iodide of potassium, and tonics if the patient be feeble. Should fever accompany the more active forms of dropsy, it would be necessary to employ antiphlogistic measures. The best of hygiene, with rest, tepid drinks, and a mild diet are also indicated whether the case be sthenic or asthenic. Warm baths are also often useful. The hydragogue which I prefer under all circumstances is elaterium. It may be employed for days in sufficient amount to produce several profuse watery stools *per diem* without any noticeable bad after-effects.*

Nephritis is obviated by the early and persistent use of quinine; but when it exists must receive active treatment, such as hypodermic injections of ergot, the administration of gallic acid, local bleeding, and counter-irri-

* As Hilton (Rest and Pain) has long ago pointed out, a disordered organ needs rest "first, last, and all the time," and whatever most subserves this indication will constitute the best treatment. It is as wrong to give diuretics in acute nephritis as it is to insist on stomach feeding in cases of gastritis. On this account it is always desirable to maintain an acutely inflamed kidney in a state of inactivity as regards the secretion of urine, and this is best accomplished by active hydro-catharsis kept up as long as necessary. If advisable diaphoresis, may be resorted to for the purpose of preventing a possible disturbance of the bowel. It should also be borne in mind that an organ is capable of taking upon itself, for a time, the work of another part of the body, if the latter is incompetent, without any bad result, such, for instance, as would otherwise follow in a condition of health. Thus hyper-catharsis kept up for days to rest a disordered kidney will have no injurious effect upon the bowel, while it would set up an enteritis if there was not marked renal incompetence.

tation. The kidneys must be relieved by a suspension of function, and this is best accomplished by free hydrocatharsis in the manner just mentioned. For hematuria gallic acid is especially useful. McGeo* recommends in this condition the ferri perchloridi with a nutritious diet. Albuminuria should be promptly met with quinine in conjunction with the preceding recommendations.[†]

The treatment of a scarlatinal case is best rounded off with a bitter ferruginous tonic for the purpose of stimulating the appetite and digestion, thus hastening convalescence. I am partial to the following mixture, which has rather an agreeable flavor.

R—Ferri Sulphatis,[‡] 3*i.*
Tincturæ Calumbæ.[§]
Glycerinæ.
Syrupi Limonis.
Aquaæ Anisi, $\text{aa } \frac{3}{4}$ *iij.*

Misce et fiat solutionem.

Sig.—One tablespoonful in a wineglassful of water just before eating.

Prof. Ringer's preference for arsenic combined with dilute nitric acid, during early convalescence, may be borne in mind with profit.^{||}

The use of strychnia during, or in anticipation of, post scarlatinal paresis or paralysis, as advised by Barwell,[¶] seems to be the most rational medicinal treatment, and should be combined with electricity.

* Loc. Cit.

† Bennett's claims for yeast in malignant cases must not be forgotten, as more seems probable with this remedy than at first sight appears.—Vide Supra.

‡ The sulphate was originally selected because it is the best of the many preparations of iron for promoting the appetite. (Bartholow.)

§ This bitter has been selected because it contains no tannin, and, therefore, can always be relied upon to form a clear amber-colored liquid with the iron, instead of the black, inky compounds of the tannate of iron, resulting from the admixture of the tannin containing bitters with iron.

|| In his therapeutics.

¶ Vide Supra.

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